Mastery Assessment of Unit 2 (Practice version 111)

Question 1

Let f represent a function. If $f[50] = 20$, then there exists a knowable solution to the equation below.

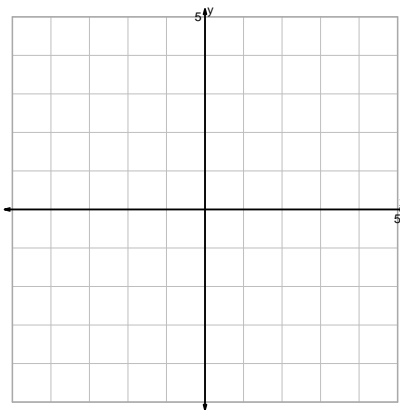$$y = 2 \cdot \left(f\left[\frac{x}{5} + 41\right] - 9 \right)$$
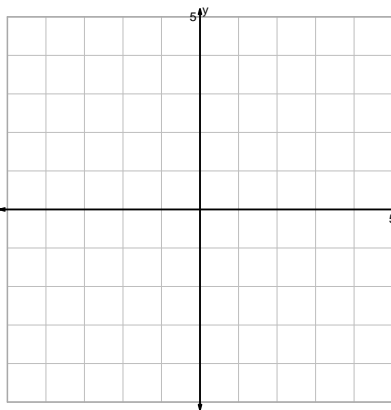
Find the solution.

$x =$

$y =$

Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.
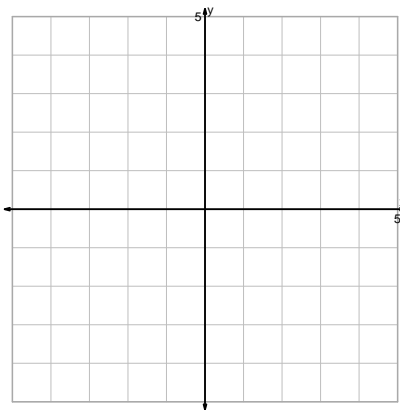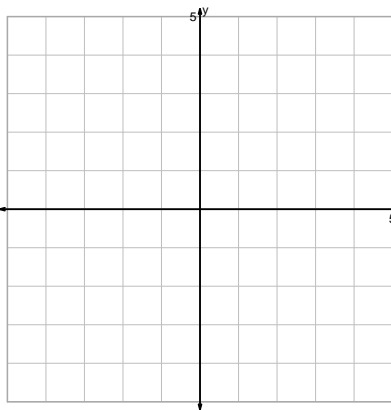
$y = \log_2\left(-x\right)$

$y = \dfrac{x^2}{2}$

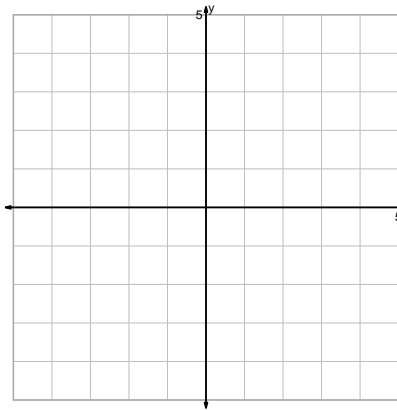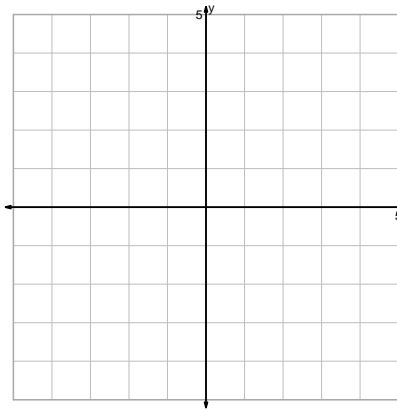$y = \left(2x\right)^3$

$y = x^2 - 2$

$$y = \left(x + 2\right)^3$$
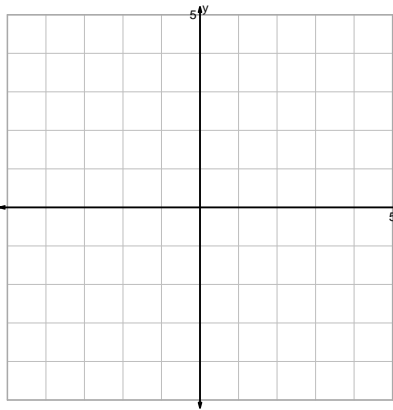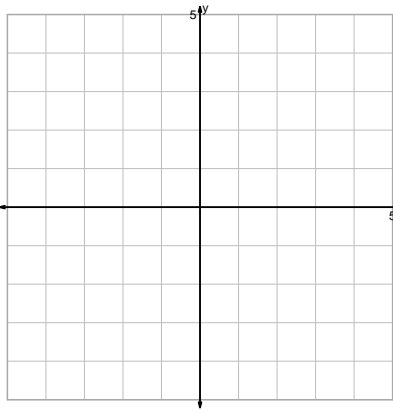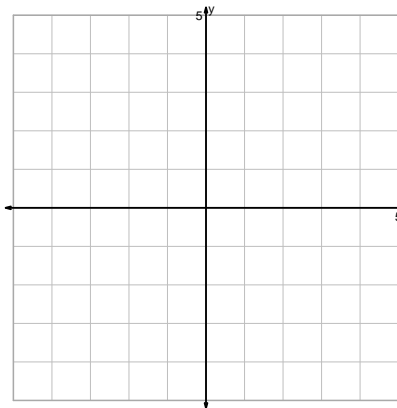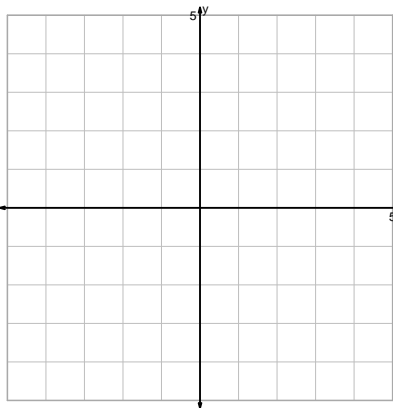
$$y = 2^{x-2}$$

$$y = -\sqrt{x}$$

$$y = \log_2\left(\frac{x}{2}\right)$$
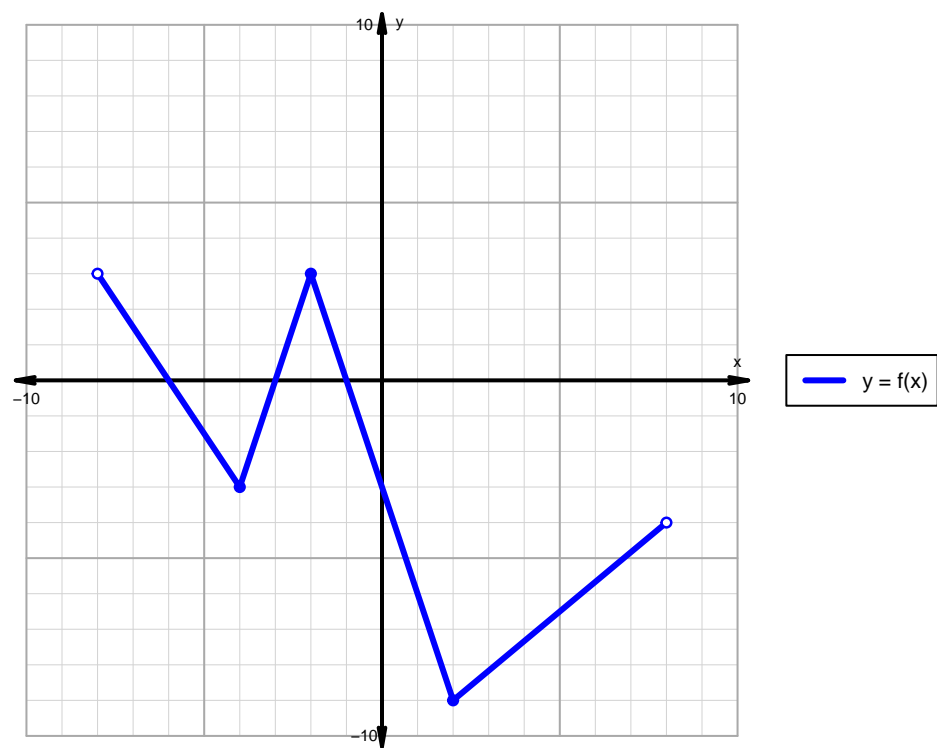
$$y = 2 \cdot \sqrt{x}$$

$$y = \sqrt[3]{x} + 2$$

Question 3
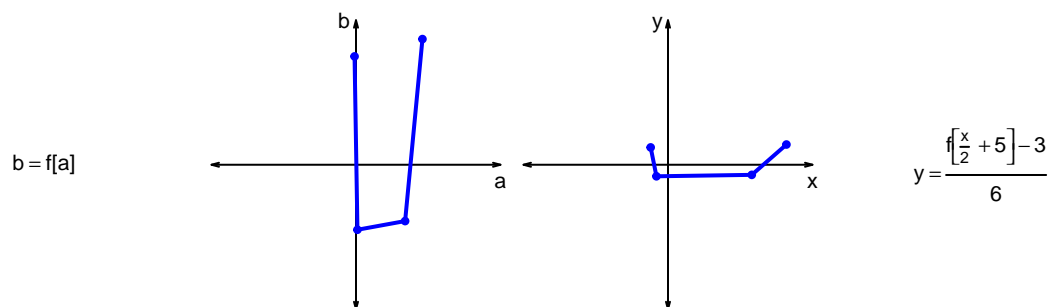
A function is graphed below.

Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f\left[\frac{x}{2}+5\right]-3}{6}$ are represented below in a table and on graphs.

a	b	x	y
-1	75	-12	12
1	-45	-8	-8
34	-39	58	-7
46	87	82	14

$b = f[a]$

a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f\left[\frac{x}{2}+5\right]-3}{6}$?

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Question 5

A parent square-root function is transformed in the following ways:
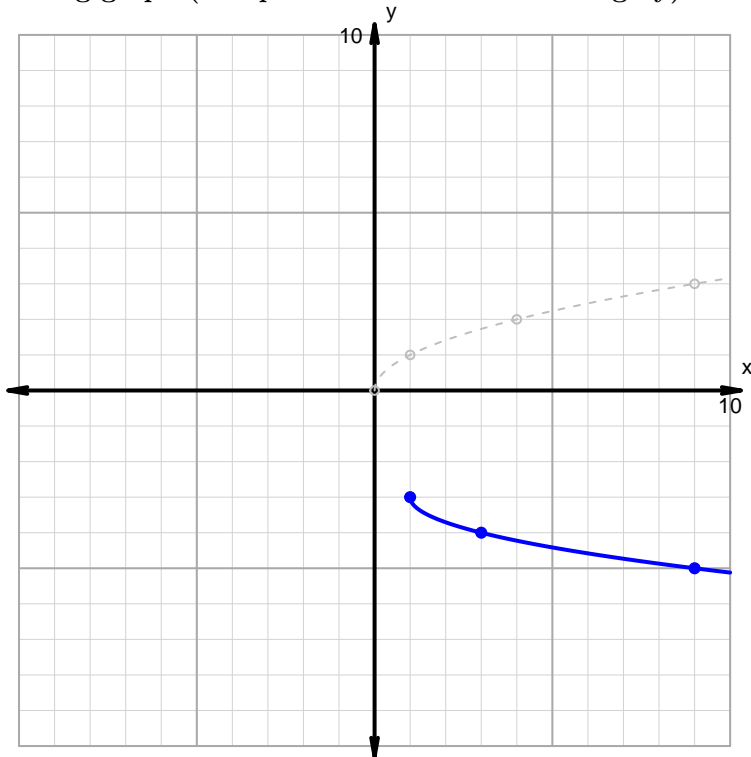
Horizontal transformations

1. Horizontal stretch by factor 2.
2. Translate right by distance 1.

Vertical transformations

1. Vertical reflection over x axis.
2. Translate down by distance 3.

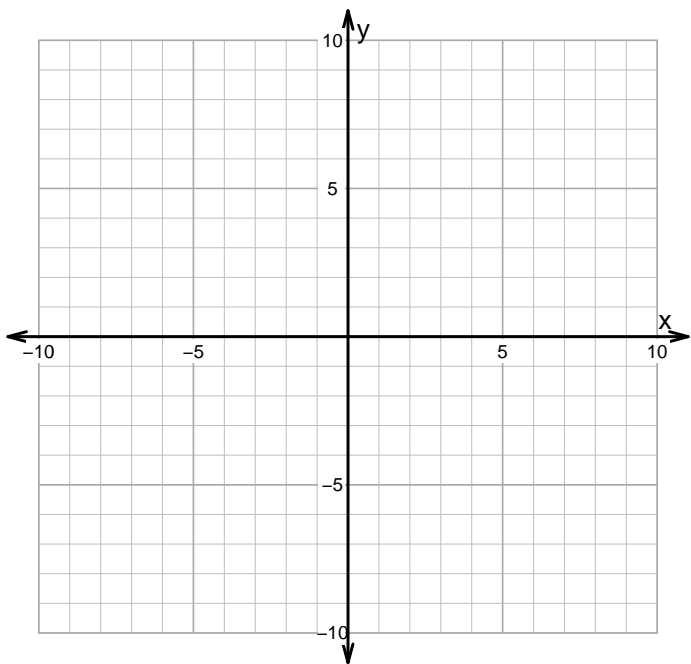**Resulting graph (and parent function in dashed grey):**

- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y = 3 \cdot |x - 8| - 3$$

Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	